Table S1. Characteristics of the studies included in the meta-analysis

Variable	BASICS 2021	BEST 2019	BASILAR 2020	RESCUE-RE (BAO) 2021
Start time, y	2011	2015	2018	2018
Publication time, y	2021	2019	2020	NA
Location	23 centers in 7 countries	28 centers in China	47 centers in China	18 centers in China
Study type	mRCT	mRCT	Cohort study	Cohort study
Participant				
Image criteria	BAO on CTA/MRA	BAO on CTA/MRA/DSA	BAO on CTA/MRA/DSA	BAO on CTA/MRA/DSA
NIHSS	≥10 in proposal	NA	NA	NA
Time (h)	<6h	<8h	<24h	<24h
Number of BAO patients in EVT groups	154/300	65/131	647/829	310/1701
IVT, n (%)	121 (78.6)	18 (27.7)	119 (18.4)	69 (22.3)
Age, Mean± SD, y	66.8±13.1	62 (IQR 50−74)	64 (IQR 56-73)	61.4±10.9
Male, n (%)	100 (64.9)	48 (72.7)	483 (74.7)	240 (77.4)
B-NIHSS, Median (IQR)	21	32 (18–38)	27 (17-33)	21 (11-27)
OTP, Median (IQR), min	264 (198–372)	246 (139-360)	328 (220-493)	485 (333-835)
Randomization	Randomized 1:1, PROBE	Randomized 1:1, PROBE	Nonrandomized	Nonrandomized
Intervention/ Exposome	EVT	EVT	EVT	DEVT
Control	SMT	SMT	SMT	IVT+EVT
ITT	Yes	Yes	NA	NA
Primary outcome	mRS 0-3	mRS 0-3	mRS score	mRS 0-2
Follow-up	90 days	90 days	90 days	90 days

Abbreviations: RESCUE-RE, a registration study for critical care of acute ischemic stroke after recanalization; BEST, acute basilar artery occlusion: endovascular interventions versus standard medical treatment trial; BASICS, basilar artery international cooperation study; BASILAR, the EVT for acute basilar artery occlusion study. mRCT, multicenter Randomized Controlled Trial; BAO, basilar artery occlusion; NIHSS, National Institutes of Health Stroke Scale; SD, standard deviation; IQR, interquartile range; mRS, modified Rankin Scale; OTP, onset to puncture; IVT, intravenous thrombolysis; EVT, endovascular treatment; DEVT, direct endovascular treatment; SMT, standard medical therapy; ITT, intention-to-treat analysis.

Supplementary of meta-analysis

Method supplementary

Search strategy:

The PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) statement were followed in this meta-analysis. PubMed, EMBASE, and Cochrane library were searched for English peer-reviewed publications that were published from Jan 1, 2015 to Jun 30, 2021. Randomized trials and high-quality cohort studies that compared IVT with EVT for the BAO patients were identified. Search strategy included the combination of terms, such as "cerebrovascular disorder", "basilar artery occlusion", "stroke", "thrombolysis", "thrombectomy", "vertebral", "posterior circulation", "aspiration", "stentretriever", "ischemic", as either keywords or MeSH terms. Related reviews, clinical trial databases, and the reference lists of all retrieved articles were also searched manually to identify relevant studies.

Search strategy in PubMed database for example:

("Stroke" [Mesh] OR Cerebrovascular event[Title/Abstract] OR Stroke[Title/Abstract] OR CVA[Title/Abstract] OR cerebrovascular accident[Title/Abstract] OR brain vascular accident[Title/Abstract] OR brain isch[Title/Abstract] OR brain infarc*[Title/Abstract] OR cerebral infarc*[Title/Abstract] OR cerebral isch* OR cerebral vessel occlusion[Title/Abstract] OR large vessel occlusion[Title/Abstract] OR intracranial*

isch[Title/Abstract] OR intracranial infarction[Title/Abstract] OR intracranial vessel occlusion [Title/Abstract] OR brain vessel occlusion [Title/Abstract]) AND (Thrombectomy [Mesh] OR Thrombectomy[Title/Abstract] OR thrombectom*[Title/Abstract] OR mechanical[Title/Abstract] OR endovascular[Title/Abstract] OR embolectomy[Title/Abstract] OR intracranial intervention[Title/Abstract] OR Stent-retriever[Title/Abstract] OR stentretriever[Title/Abstract] OR preset[Title/Abstract] OR solitaire[Title/Abstract] OR trevo[Title/Abstract] OR catch[Title/Abstract] OR aspiration[Title/Abstract] AND (Tissue Plasminogen Activator [Mesh] OR bridging*[Title/Abstract] OR thrombolysis[Title/Abstract] OR rtPA[Title/Abstract] OR tpA[Title/Abstract] OR rt PA[Title/Abstract] OR alteplase[Title/Abstract] OR bridging-therapy[Title/Abstract]OR plasminogen activator[Title/Abstract] or recombinantplasminogen[Title/Abstract] OR plasminogen-activator [Title/Abstract]) AND (direct[Title/Abstract] OR combined[Title/Abstract] OR with[Title/Abstract] OR alone[Title/Abstract] OR combination[Title/Abstract] OR preceding[Title/Abstract] OR preinterventional[Title/Abstract] OR prior [Title/Abstract] OR before [Title/Abstract] OR previous [Title/Abstract] OR concomitant [Title/Abstract] or stand-alone [Title/Abstract] or together [Title/Abstract] or following [Title/abstract] or followed [Title/abstract]) or eligible [Title/abstract] or contraindication [Title/abstract] or ineligible [Title/abstract] or preproced*[Title/abstract] or preinterv*[Title/abstract] or prethrom*[Title/abstract] or pre-proced*[Title/abstract] or preinter*[Title/abstract] or pre-throm*[Title/abstract]) AND (basilar artery [MeSH Terms] OR posterior [Title/abstract] OR posteriors [Title/abstract] OR blood[Title/abstract] OR

circulation[Title/abstract] OR blood circulation[Title/abstract] OR circulation[Title/abstract] OR circulations[Title/abstract] OR circulate[Title/abstract] OR circulated[Title/abstract] OR circulates[Title/abstract] OR circulating[Title/abstract] OR artery[Title/abstract] OR basilar artery[Title/abstract] OR occlusion [Title/abstract] OR occlused [Title/abstract] OR occlusions[Title/abstract] OR occlusive[Title/abstract] OR occlusives[Title/abstract] OR basilar[Title/abstract] AND artery[Title/abstract] OR basilar artery[Title/abstract] AND artery[Title/abstract] OR basilar artery[Title/abstract]

Selection criteria:

According to the objective of this analysis, only randomized trials and high-quality cohort studies plus the current cohort study that reported reporting the clinical efficacy, safety of EVT and percentage of IVT used in EVT group among adult (≥18) patients with acute basilar artery occlusion. We limited the studies to English language and excluded case reports, small size cohort (< 100), conference proceedings, and reviews.

Outcomes Measure:

The outcome was good functional outcome at 3 months. Good functional outcome after 3 months was defined as a modified Rankin score (mRS) of 0-2 at 3 months after stroke onset.

Data extraction

Two physicians independently extracted data from identified publications based on the inclusion criteria. Disagreements were resolved through the discussion among all authors until a consensus was reached. Data on the total number of patients treated with EVT, onset-to-EVT time, percentage of IVT used before EVT and duration of follow-up, were extracted from publications. The occurrence of the following events was extracted for individual trials and analyzed for the EVT group: total patients, treated with IVT, with a mRS of 0-2, and deceased patients at 90 days (IVT+EVT group and DEVT group of RESCUE-RE were analyzed separately). Characteristic data were also retrieved. Between-study heterogeneities were evaluated by the I^2 statistic and the Cochrane Q (χ^2) statistic, with a P value of 0.05 set to be significant for heterogeneity.

Result supplementary

Heterogeneity, risk of bias and quality assessment

There was significant heterogeneity across the four studies (five EVT groups, I^2=64.63%, p<0.01), but no significant heterogeneity was found in subgroups on onset-to-EVT time and There was no statistical difference of functional independence between the two subgroups (Figure S1). There was also no significant publication bias detected with the examination of funnel plots for the outcome of functional independence (Figure S2) or

with Egger's regression test (P=0.095). The GRADE system assesses evidence quality with four levels: high, moderate, low, or very low. The initial grading would be decreased if there were study limitations, inconsistencies, imprecision, indirectness, or publication bias (Table S2).

Table S2. Quality evaluation of the 4 included studies according to the GRADE scale

Study	Risk of bias	Indirectness	Imprecision	Publication bias	Large effect	Plausible residual confounding	Total	Quality of evidence
RESCUE-RE 2021	-1	0	0	0	0	0	1	Very low
BEST 2019	0	-1	0	0	0	0	3	Moderate
BASICS 2021	0	-1	0	0	0	0	3	Moderate
BASILAR 2020	-1	-1	0	0	0	0	0	Very low

Abbreviations: GRADE, Grading of Recommendations, Assessment, Development and Evaluations; IVT, intravenous thrombolysis; EVT, endovascular treatment; RESCUE-RE, registration study for critical care of acute ischemic stroke after recanalization registry; BEST, endovascular interventions versus standard medical treatment trial; BASICS, basilar artery international cooperation study; BASILAR, the EVT for acute basilar artery occlusion study.

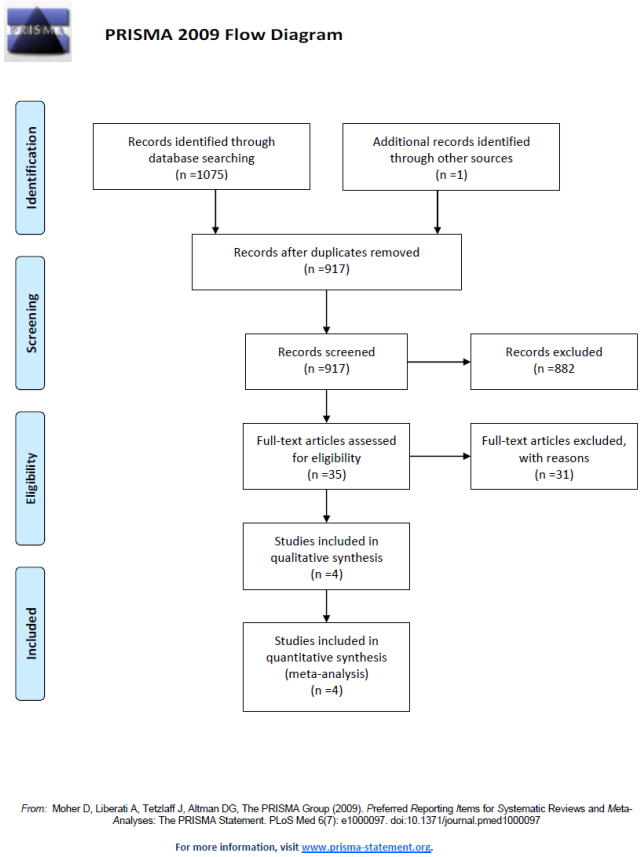

Figure S1. Flow diagram

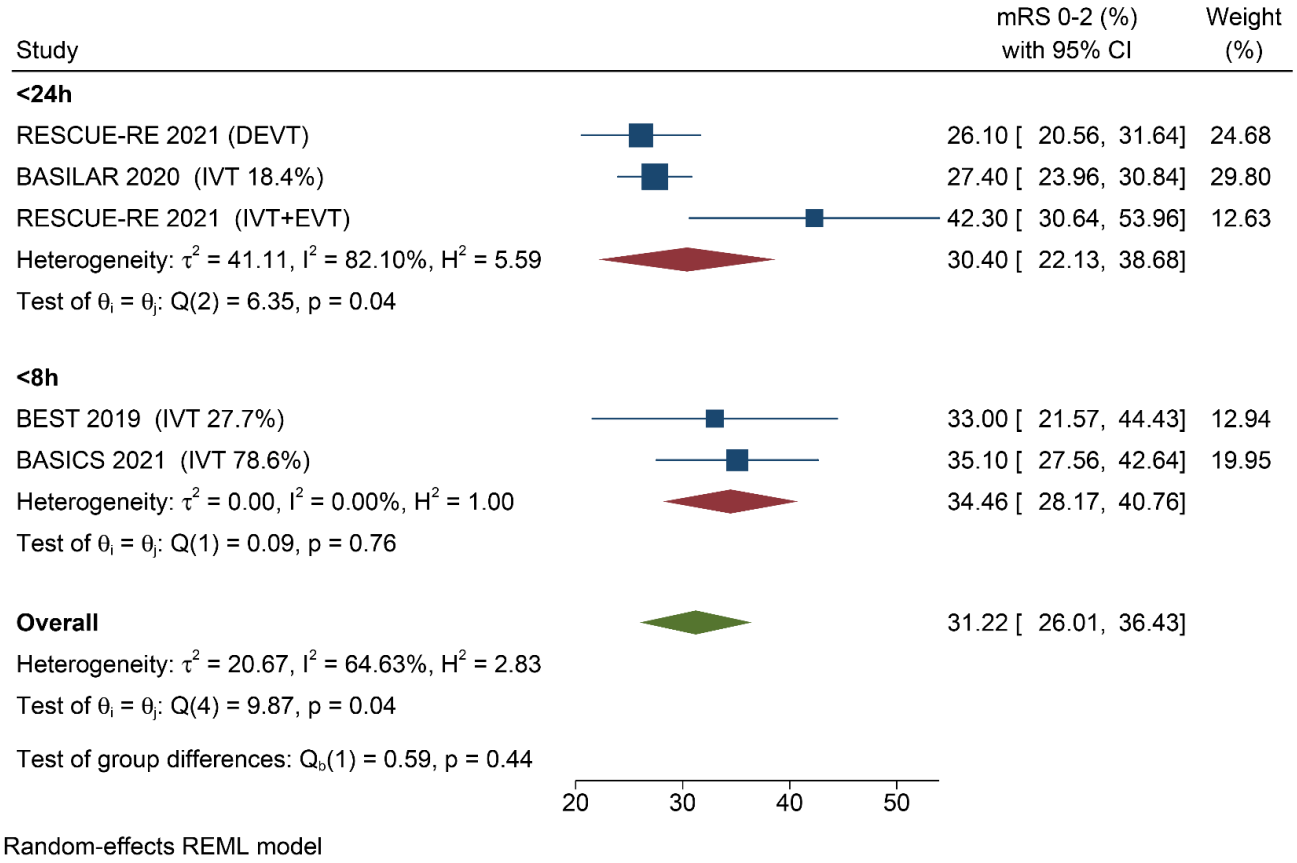

Figure S2. Stratified analysis by onset-to-EVT time of meta-analysis (functional independence, mRS 0-2 at 90d [%]) of each arm of RESCUE-RE and EVT arms of pivotal EVT trials on BAO with restricted maximum-likelihood random-effects method.

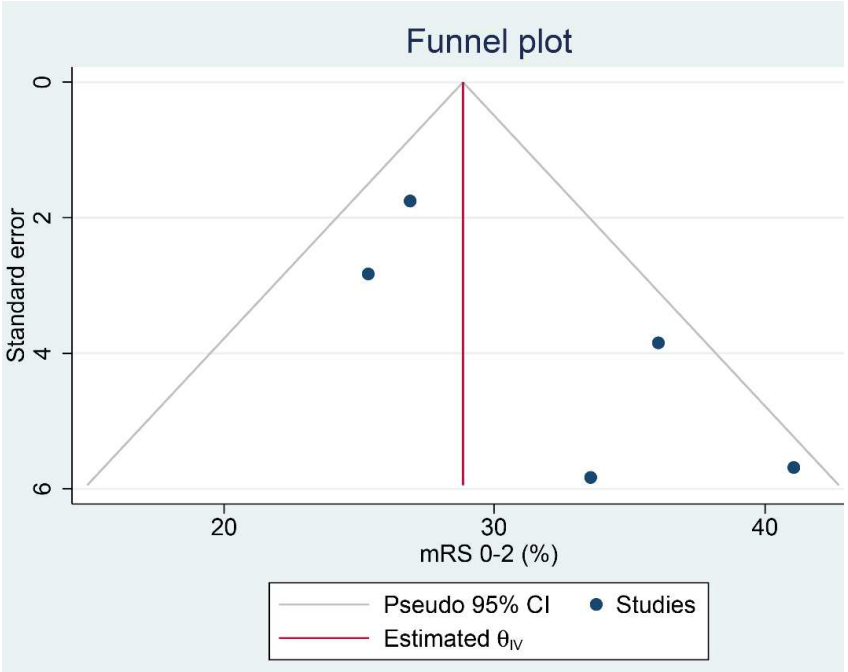

Figure S3. Risk of publication bias: funnel plot for the outcome of functional independence.